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EXAMINER	
BOWERS, NATHAN ANDREW	
ART UNIT	**PAPER NUMBER**
1744	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/07/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/705,447	XU ET AL.	
	Examiner	Art Unit	
	Nathan A. Bowers	1744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _10 November 2003_.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-50,69 and 72_ is/are pending in the application.

4a) Of the above claim(s) _69_ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-50 and 72_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _10 November 2003_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _121905, 030903_.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-50 and 72, drawn to a device and method for detecting cells, classified in class 435, subclass 287.2.

II. Claim 69, drawn to a method of making a cell detection chip, classified in class 204, subclass 403.

Inventions of Group II and Group I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product can be made by another material different process that does not require laser ablation of a conductive film.

Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with David Preston on 30 October 2006 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-50 and 72. Affirmation of this election must be made by applicant in replying to

this Office action. Claim 69 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 48-50 and 72 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 48-50 are dependent on claim 53, which is a canceled claim. It is unclear what claim Applicant intended these claims to be dependent upon.

With respect to claim 72, the term "high" is a relative term which renders the claim indefinite. The term "high" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Unless further explanation is given, essentially any probability could be considered "high."

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1) Claims 1-4, 6-10, 25-28, 33, 36, 38-40, 43-46 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kovacs (US 6051422) in view of Facer (US 20030072549).

With respect to claims 1, 8, 9, 36, 43 and 72, Kovacs discloses a microelectronic cell sensor array comprising a non-conductive substrate (Figure 6:69) and at least one electrode array (Figure 6:68) positioned on the substrate. Figures 3 and 4 disclose embodiments in which a plurality of electrode arrays (34) are provided for cell detection.

Figures 7-9 indicate that each electrode array includes a plurality of individual electrodes that are separated from each other by an area of non-conductive material. A reference electrode (Figure 3:31) is in communication with the electrode arrays to assist in measuring cell impedance. See column 3, line 43 to column 5, line 19, column 7, lines 17-23, column 8, lines 34-31, column 9, lines 24-38 and column 12, lines 36-62. Additionally, Kovacs teaches that the electrically conductive traces extend from bond pads at the opposing ends of the substrate, and are in communication with the electrode arrays. This is described in column 4, lines 60-66 and illustrated in Figures 7-9. Kovacs, however, does not expressly state that the electrodes in each array have a width of more than 1.5 to 10 times the width of the non-conductive area between the electrodes.

Facer discloses a device for detecting cells that comprises a non-conductive substrate (Figure 1:12) and a plurality of conductive elements (Figure 14, 16) positioned on the substrate. Paragraph [0012] states that a gap (Figure 1:20) is made in the inner conductor through which biological solutions are allowed to pass. Changes in impedance across the gap are then detected using the conductive elements. Paragraphs [0027]-[0033] give exemplary ranges of sizes and widths for the conductive elements and the gap. Facer suggests that the conductive elements have a width of approximately 40 microns, and that the gap constituting the area between the conductive elements is characterized by a width of 1 to 10 microns.

Kovacs and Facer are analogous art because they are from the same field of endeavor regarding microelectronic cell sensor devices.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to alter Kovacs's device to ensure that the electrode widths were more than 1.5 and less than 10 times the non conductive material width if it was determined through trial and error that this configuration produced the best results. This limitation is considered to be a result effective variable that is optimized through routine experimentation. This position is supported by Facer, who indicates in paragraph [0033] that electrode width and gap sizes all depend on several considerations that involve engineering tradeoffs. Facer implies that it is known in the art to consider a variety of width sizes in order to produce the best configuration for the current experiment.

With respect to claim 2, Kovacs and Facer disclose the apparatus in claim 1. In addition, Kovacs teaches that the substrate is constructed from glasses, silicons, and polymers. This is stated in column 13, lines 39-43.

With respect to claim 3, Kovacs and Facer disclose the apparatus in claim 1. In addition, Kovacs teaches that the non-conductive substrate is flat. This is apparent from Figure 6.

With respect to claim 4 and 44, Kovacs and Facer disclose the apparatus in claim 1. Kovacs additionally indicates in column 13, line 66 to column 14, line 15 that the substrate is formed by a multiwell plate so that each electrode array is positioned in

an individual well.

With respect to claim 6, 7, 45 and 46, Kovacs and Facer disclose the apparatus in claim 1. Additionally, Kovacs teaches that some electrical traces are positioned between adjacent electrodes. Furthermore, the electrodes of each array are of equal widths. This is evident from Figures 7 and 8.

With respect to claim 10, Kovacs and Facer disclose the apparatus in claim 1. In addition, Kovacs teaches that each electrode array comprises a plurality of evenly spaced electrodes. It is apparent from Figures 7-9 that the electrodes in each array are arranged in an orderly fashion and are evenly spaced.

With respect to claims 25 and 40, Kovacs and Facer disclose the apparatus in claim 1. Furthermore, both Kovacs and Facer disclose the use of impedance analyzers electrically connected to the array electrodes through conductive traces. Specifically, this is described by Kovacs in column 8, lines 24-38.

With respect to claim 25, Kovacs and Facer disclose the apparatus in claim 1, wherein the impedance is measured at a frequency ranging from 1 Hz to 1MHz. Kovacs gives numerous examples throughout the reference indicating frequencies within this range.

With respect to claims 27 and 28, Kovacs and Facer disclose the apparatus in claim 1, wherein the electrically conductive traces (Figure 5:52) within the substrate are covered with an insulating layer (Figure 5:58). This is described in column 12, lines 36-50.

With respect to claim 33, Kovacs and Facer disclose the apparatus in claim 1, wherein each of the electrical traces are up to 10 mm from the nearest electrical trace. This is apparent from Figure 7A and the scale at the bottom right hand of the figure.

With respect to claims 38 and 39, Kovacs and Facer disclose the apparatus in claim 1. Kovacs additionally discloses a method for using the apparatus. Column 9, lines 24-65 indicate that impedance measurements are generated when target cells are positioned directly on the electrodes as well as when the target cells are suspended in fluid around in the electrodes in order to determine to what degree cell adhesion affects communication between the reference and measuring electrodes. Column 19, lines 24-31 specifically indicate that the effects of the chemicals on cell adhesion are studied. Column 5, lines 20-39 state that the cells are supplied with a culture media sufficient for target cell growth.

2) Claims 1-3, 8-10, 36, 40-43 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugihara (US 6132683) in view of Facer (US 20030072549).

With respect to claims 1, 8, 9, 36, 43 and 72, Sugihara discloses a

microelectronic cell sensor array comprising a substrate (Figure 2:2) covered by a non conductive film. As best seen in Figures 3 and 4, four electrode arrays are positioned on the substrate so that each array includes a plurality of electrodes connected to conductive patterns (Figure 4:12) and contacts (Figure 4:7). Each array additionally comprises a reference electrode (Figure 4:10). This is disclosed in column 6, lines 32-67. Column 2, lines 35-67 indicate that the cell activity is determined by measuring changes in impedance recorded by the electrodes. Additionally, Sugihara teaches that the electrically conductive traces (Figure 4:12) extend from the opposing ends of the substrate and are in communication with the electrode arrays. This is described in column 6, lines 50-67. Sugihara, however, does not expressly state that the electrodes in each array have a width of more than 1.5 to 10 times the width of the non-conductive area between the electrodes.

Facer discloses a device for detecting cells that comprises a non-conductive substrate (Figure 1:12) and a plurality of conductive elements (Figure 14, 16) positioned on the substrate. Paragraph [0012] states that a gap (Figure 1:20) is made in the inner conductor through which biological solutions are allowed to pass. Changes in impedance across the gap are then detected using the conductive elements. Paragraphs [0027]-[0033] give exemplary ranges of sizes and widths for the conductive elements and the gap. Facer suggests that the conductive elements have a width of approximately 40 microns, and that the gap constituting the area between the conductive elements is characterized by a width of 1 to 10 microns.

Sugihara and Facer are analogous art because they are from the same field of

endeavor regarding microelectronic cell sensor devices.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to alter Sugihara's device to ensure that the electrode widths were more than 1.5 and less than 10 times the non conductive material width if it was determined through trial and error that this configuration produced the best results. This limitation is considered to be a result effective variable that is optimized through routine experimentation. This position is supported by Facer, who indicates in paragraph [0033] that electrode width and gap sizes all depend on several considerations that involve engineering tradeoffs. Facer implies that it is known in the art to consider a variety of width sizes in order to produce the best configuration for the current experiment.

With respect to claim 2, Sugihara and Facer disclose the apparatus in claim 1. In addition, Sugihara teaches that the substrate is constructed from glass. This is stated in column 3, line 39.

With respect to claim 3, Sugihara and Facer disclose the apparatus in claim 1. In addition, Sugihara teaches that the non-conductive substrate is flat. This is apparent from Figures 2, 3 and 4.

With respect to claim 10, Sugihara and Facer disclose the apparatus in claim 1. In addition, Sugihara teaches that each electrode array comprises a plurality of evenly

spaced electrodes. It is apparent from Figure 3 that the electrodes in each array are arranged in an orderly fashion and are evenly spaced.

With respect to claims 40-42, Sugihara and Facer disclose the apparatus in claim 1, wherein an impedance analyzer and a connection means are provided for establishing electrical communication between the conductive trances and the impedance analyzer. This is described by Sugihara in Figure 1 and in column 4, line 46 to column 6, line 19. Column 6, lines 20-31 states that the substrate (Figure 2:2) is engaged by a holders (Figure 2:3,4) that function as a mechanical clip. The holders are adapted to form an electrical connection with the traces on the substrate and with a printed circuit board (Figure 2:5).

3) Claims 1-3, 5, 7-15, 25, 36, 38-40, 43 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolf (US 6280586) in view of Facer (US 20030072549).

With respect to claims 1, 8, 9, 36, 43 and 72, Wolf discloses a device for detecting cells comprising a non-conductive substrate (Figure 2:5) having two opposing ends, and a plurality of electrode arrays positioned on the substrate. Each electrode array comprises at least two electrodes (Figure 2:10), and electrically conductive trances and connection pads are in communication with the electrode arrays. The electrodes are used to detect impedance changes resulting from attachment of cells to the electrode surface. This is described in column 2, lines 39-55, column 3, lines 11-28,

and column 7, lines 29-50. Wolf, however, does not expressly state that the electrodes in each array have a width of more than 1.5 to 10 times the width of the non-conductive area between the electrodes.

Facer discloses a device for detecting cells that comprises a non-conductive substrate (Figure 1:12) and a plurality of conductive elements (Figure 14, 16) positioned on the substrate. Paragraph [0012] states that a gap (Figure 1:20) is made in the inner conductor through which biological solutions are allowed to pass. Changes in impedance across the gap are then detected using the conductive elements. Paragraphs [0027]-[0033] give exemplary ranges of sizes and widths for the conductive elements and the gap. Facer suggests that the conductive elements have a width of approximately 40 microns, and that the gap constituting the area between the conductive elements is characterized by a width of 1 to 10 microns.

Wolf and Facer are analogous art because they are from the same field of endeavor regarding microelectronic cell sensor devices.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to alter Wolf's device to ensure that the electrode widths were more than 1.5 and less than 10 times the non conductive material width if it was determined through trial and error that this configuration produced the best results. This limitation is considered to be a result effective variable that is optimized through routine experimentation. This position is supported by Facer, who indicates in paragraph [0033] that electrode width and gap sizes all depend on several considerations that involve engineering tradeoffs. Facer implies that it is known in the art to consider a variety of width sizes in order to

produce the best configuration for the current experiment.

With respect to claims 2 and 3, Wolf and Facer disclose the apparatus in claim 1 wherien the substrate comprises glass, sapphire or silicon. This is described in column 7, lines 29-50.

With respect to claims 5, 7, 10, 11 and 13-15, Wolf and Facer disclose the apparatus in claim 1 wherein up to half of the electrical traces extend to one end of the substrate, and the remaining electrical traces extend to the other end of the substrate. The electrodes are of equal width and are evenly spaced. Figure 2 indicates that the electrodes are organized in an interdigitated fashion, and that a bus is associated with the plurality of electrodes in each electrode array. It is apparent from the Figures that a gap on the substrate exists between the bus and the array of electrodes, thus forming an area of non conductive material.

With respect to claim 12, Wolf and Facer disclose the apparatus in claim 10 wherein each array of electrodes is organized in a sinusoidal fashion. This is disclosed by Wolf in Figure 1. Additional electrodes designs, such as concentric, castellated, and honeycomb, are considered to be obvious variants from the sinusoidal and comb designs disclosed by Wolf. These other designs would not perform differently than the designs set forth in the prior art, and therefore do not constitute a patentable difference. See MPEP 2144.04.

With respect to claims 25 and 40, Wolf and Facer disclose the apparatus in claim 1. Furthermore, both Wolf and Facer disclose the use of impedance analyzers electrically connected to the array electrodes through conductive traces. Specifically, this is described by Wolf in column 3, lines 37-49.

With respect to claims 38 and 39, Wolf and Facer disclose the apparatus in claim 1. Wolf additionally discloses a method for using the apparatus. Impedance measurements are generated when target cells are positioned directly on the electrodes as well as when the target cells are suspended in fluid around in the electrodes in order to determine to what degree cell adhesion affects communication between the reference and measuring electrodes. Cells are supplied with a culture media sufficient for target cell growth.

4) Claims 16-24, 29-32, 34 and 47-50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wolf (US 6280586) in view of Facer (US 20030072549) as applied to claims 13 and 15, and further in view of Wolf (US 6376233).

Wolf '586 and Facer disclose the apparatus set forth in claims 13 and 15 as set forth in the 35 U.S.C. 103 rejection above, however do not expressly indicate that a plurality of receptacles are disposed on the nonconductive substrate to produce fluid tight containers.

Wolf '233 discloses an apparatus and method for recording electrophysiological activity of biological cells. A plurality of sensors (Figure 4:7) are provided to correspond

with the wells (Figure 3:10) formed by a microtiter plate (Figure 3:11). This is described in column 6, lines 17-30 and in Figures 3-6. Each sensor array (Figure 4:7a) includes at least one stimulus electrode capable of interacting with cells. Wolf additionally discloses a retaining part (Figure 3) capable of culturing cells in a region directly above the sensor array.

Wolf '586, Facer and Wolf '233 are analogous art because they are from the same field of endeavor regarding microfluidic devices that are used to electrically monitor cells.

At the time of the invention, it would have been obvious to provide the device proposed by Wolf '586 and Facer with a solution retaining part capable of culturing cells. This would have been beneficial because it would have allowed one to encourage cell growth at the integrated electrode, thus removing the need to transport the cell sample from a remote location to the sensor. By eliminating this transportation step, one would be able to increase efficiency and reduce contamination and fluid loss.

5) Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wolf (US 6280586) in view of Facer (US 20030072549) as applied to claim 1, and further in view of Surridge (US 20030116447).

Wolf and Facer disclose the apparatus set forth in claim 1 as set forth in the 35 U.S.C. 103 rejection above. Additionally, Wolf discloses that the device is produced by providing a non-conductive substrate. Wolf, however, does not state that a conductive

film is deposited on the substrate, or that electrodes are patterned using laser ablation of the conductive film.

Surridge discloses a substrate that includes a plurality of electrode arrays capable of detecting an analyte in a sample solution. Paragraphs [0079]-[0082] indicate that interdigitated electrode arrays (Figure 1) are formed from a conductive film using laser ablation.

Wolf, Facer and Surridge are analogous art because they are from the same field of endeavor regarding biological detection systems.

At the time of the invention, it would have been obvious to create the electrodes disclosed by Wolf using a conductive film modified by a laser ablation process. Surridge states that laser ablation techniques are well known in the art, and that suitable lasers are widespread and commercially available. Surridge suggests that laser ablation techniques employing the use of a conductive film are especially suited for the creation of interdigitated microelectrodes.

6) Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wolf (US 6280586) in view of Facer (US 20030072549) as applied to claim 1, and further in view of Gomez (US 20030157587).

Wolf and Facer disclose the apparatus set forth in claim 1 as set forth in the 35 U.S.C. 103 rejection above, however do not expressly state that capture reagents are immobilized on the surfaces of the electrodes.

Gomez discloses a microelectronic cell sensor that comprises a substrate (Figure

14:54) and a plurality of electrodes (Figure 14:36) capable of determining the presence of cells in a sample solution. Paragraphs [0087] and [0112] state that antibodies (Figure 14:76) are attached to the electrodes and the substrate in order to selectively bind to target bacteria cells (Figure 14:78). A difference in electrical measurements between the electrodes and a reference electrode indicates the presence of target cells in the detection chamber. The binding antibodies disclosed by Gomez are considered to be capable of being isolated from an extracellular matrix, and capable of binding to a cell surface receptor.

Wolf, Facer and Gomez are analogous art because they are from the same field of endeavor regarding microelectronic cell sensor devices.

At the time of the invention, it would have been obvious to attach antibodies and other biological molecules to the substrate disclosed by Wolf and Facer. This would have provided an established binding area suitable for cell attachment, and would have allowed one the ability to dictate the location of cells during detection. Gomez teaches in paragraph [0032] that the use of biological binding molecules are beneficial because they can be used to purify a cell sample prior to detection, thereby ensuring that any recording changes in impedance is due solely to the presence of cells rather than contaminants in the solution.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory

obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7) Claims 1, 4, 25, 38-40 and 72 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 2 and 58 of copending Application No. 11055639 in view of Facer (US 20030072549).

The claims of Application No. 11055639 disclose a device and method for detecting cells that comprises a non-conductive substrate and a plurality of electrode arrays wherein each electrode array comprises at lest two or more electrodes. Electrically conductive traces and connection pads are provided. The claims of Application No. 11055639, however, do not state that specifics regarding electrode width and positioning.

Facer discloses the device as previously described above. Paragraphs [0027]-[0033] give exemplary ranges of sizes and widths for the conductive elements and the gap. Facer suggests that the conductive elements have a width of approximately 40 microns, and that the gap constituting the area between the conductive elements is

characterized by a width of 1 to 10 microns.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to alter the device of Application No. 11055639 to ensure that the electrode widths were more than 1.5 and less than 10 times the non conductive material width if it was determined through trial and error that this configuration produced the best results. This limitation is considered to be a result effective variable that is optimized through routine experimentation. This position is supported by Facer, who indicates in paragraph [0033] that electrode width and gap sizes all depend on several considerations that involve engineering tradeoffs. Facer implies that it is known in the art to consider a variety of width sizes in order to produce the best configuration for the current experiment.

This is a provisional obviousness-type double patenting rejection.

8) Claims 1, 4, 25, 38-40 and 72 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 51, 72 and 75 of copending Application No. 10987732 in view of Facer (US 20030072549).

The claims of Application No. 10987732 disclose a device and method for detecting cells that comprises a non-conductive substrate and a plurality of electrode arrays wherein each electrode array comprises at lest two or more electrodes. The use of an impedance analyzer is additionally described. Conductive traces and bonding pads are considered to be well known in the art. The claims of Application No. 10987732, however, do not state that specifics regarding electrode width and

positioning.

Facer discloses the device as previously described above. Paragraphs [0027]-[0033] give exemplary ranges of sizes and widths for the conductive elements and the gap. Facer suggests that the conductive elements have a width of approximately 40 microns, and that the gap constituting the area between the conductive elements is characterized by a width of 1 to 10 microns.

At the time of the invention, it would have been obvious to one of ordinary skill in the art to alter the device of Application No. 10987732 to ensure that the electrode widths were more than 1.5 and less than 10 times the non conductive material width if it was determined through trial and error that this configuration produced the best results. This limitation is considered to be a result effective variable that is optimized through routine experimentation. This position is supported by Facer, who indicates in paragraph [0033] that electrode width and gap sizes all depend on several considerations that involve engineering tradeoffs. Facer implies that it is known in the art to consider a variety of width sizes in order to produce the best configuration for the current experiment.

This is a <u>provisional</u> obviousness-type double patenting rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan A. Bowers whose telephone number is (571) 272-8613. The examiner can normally be reached on Monday-Friday 8 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gladys Corcoran can be reached on (571) 272-1214. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NAB

GLADYS JP CORCORAN
SUPERVISORY PATENT EXAMINER